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OP=AND			
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L3	L1 and (gonadotrop\$ or fsh or lh or gnrf or hcg)	0	L3
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L6: Entry 7 of 10

File: EPAB

Jan 6, 1982

DOCUMENT-IDENTIFIER: EP 43359 A2

TITLE: Determination of terminal saccharide groups in <u>alycoprotein</u>.

Abstract Text (1):

A method of determining qualitatively and/or quantitatively terminal saccharide groups in <u>glycoproteins</u> from body liquids having a <u>microheterogeneity</u> in the saccharide group or groups. The method comprises three steps: 1) Binding of <u>glycoprotein</u> antibodies to a solid phase: 2) Binding of <u>glycoprotein</u> from body liquid and from standard solutions with a defined composition of terminal saccharide groups to the product from step 1. 3) Binding of labeled lectin to the complex of antiglycoprotein, <u>glycoprotein</u> and solid phase from step 2. The amount of bound labeled lectin can then be measured in the product from step 3 or the amount of unbound marked lectin in the supernatant and possible wasing solutions can be measured. This amount is correlated to the amount of terminal saccharide groups in the <u>glycoprotein</u> and on the basis of this the amount of a <u>glycoprotein</u> component with a special composition of terminal saccharide groups can also be determined. The method can be used in medical diagnostics.

06624810 90250373 PMID: 2187048

Gonadotrophin glycosylation and function.

Wilson C A; Leigh A J; Chapman A J

Department of Obstetrics and Gynaecology, St George's Hospital Medical School, London.

Journal of endocrinology (ENGLAND) Apr 1990, 125 (1) p3-14, ISSN 0022-0795 Journal Code: 0375363

Document type: Journal Article; Review; Review, Academic

Languages: ENGLISH

Main Citation Owner: NLM Record type: Completed Subfile: INDEX MEDICUS

This review emphasizes the heterogeneous structure of the gonadotrophin hormones and the influence of different oligosaccharide structures on the bioactivity of these hormones. A summary has been made of the changes in biopotency of the gonadotrophins throughout the life-cycle of the human and in different endocrine states in the rat. In general it appears that the charge of the gonadotrophin conferred by the acid radicals attached terminal groups on the oligosaccharide structures strongly influences biopotency. Basic structures have a greater potency in in-vitro assays, but a short half-life in the circulation, while acidic isoforms are less potent, but have a longer circulatory time and are thus more active in in-vivo estimations. More basic forms are secreted over the adult reproductive years compared with the prepubertal period and old age. The glycosyl structure of the carbohydrate groups also alters in different endocrine states and is probably also important for the bioactivity and potency of the hormone. **Gonadotrophin** -releasing hormone (GnRH) and gonadal steroids can influence the type of **isoform** synthesized and released, and therefore affect the function of gonadotrophins . GnRH enhances glycosylation, sulphation and biopotency. Oestradiol potentiates the glycosylation induced by GnRH and reduces sialylation , while testosterone increases sialylation . (122 Refs.)

Tags: Animal; Female; Human; Male; Support, Non-U.S. Gov't

Descriptors: **Gonadotropins** --physiology--PH; Adolescent; Adult; Glycosylation; Infant, Newborn; Middle Age; Oligosaccharides--metabolism --ME; Pituitary Hormone-Releasing Hormones--physiology--PH; Rats

CAS Registry No.: 0 (Gonadotropins); 0 (Oligosaccharides); 0

(Pituitary Hormone-Releasing Hormones)

Record Date Created: 19900618
Record Date Completed: 19900618

10576824 96389001 PMID: 8796333

European collaborative study of LH assay: 3. relationship of immunological reactivity, biological activity and charge of human luteinizing hormone.

Niccoli P; Costagliola S; Patricot M C; Mallet B; Benahmed M; Carayon P Laboratoire de Biochimie Endocrinienne et Metabolique, Unite 38 INSERM, Faculte de Medecine, Marseille, France.

Journal of endocrinological investigation (ITALY) (May 1996), 19 (5) p260-7, ISSN 0391-4097 Journal Code: 7806594

Document type: Journal Article

Languages: ENGLISH

Main Citation Owner: NLM Record type: Completed Subfile: INDEX MEDICUS

This report describes the results of the third part of the collaborative study organized by a working group sponsored by the Community Bureau of Reference of the European Community Commission. The aim of the present work was to establish the link between immunoreactivity and biological activity of human LH, thus allowing to determine the antigenic domains of the molecule involved in the induction of the biological effect. The relationship between immunoreactivity and electric charge of hLH was also studied. This work allowed to further apprehend hLH isomorphism and its role in discrepancies observed among hLH assays and clinical status. It also made the feasibility of measuring biologically active isoforms by an immunological method to be assessed. The effect of 36 mAb with known epitopic specificity, was evaluated on both hLH binding to rat membrane receptor and hLH induced production of testosterone by porcine Leydig cells. All the epitopes located on the beta subunit were found to be strongly involved in the biological activity whereas 4/9 and 10/18 epitopes present on the alpha subunit or specific for the holomolecule respectively appeared weakly involved. Assaying biological hLH using immunological method would require that mAb specific for all the epitopes involved in the receptor activation be tested, and thus appears presently unsuitable for routine clinical evaluation. In the previous work some LH immunoassays were found to underestimate LH concentrations (J. Endocrinol. Invest 1994, 17: 397-406 and 407-416). The mAb used in liquid phase in these kits were found in the present work to be directed against the domains of LH weakly involved in the activation of the receptor and would suggest that bioactive LH would be misevaluated by these kits. The immunoreactivity of hLH separated by isoelectric focusing (IEF) in liquid phase was isoforms also determined. IEF allowed to separate three groups of hLH isoforms but none of them exhibited a specific discriminating pattern of immunoreactivity when they were tested against a panel of mAb. It suggests that, in our experimental conditions, the electric charge and the immunoreactivity of hLH were not closely linked.

Tags: Animal; Human; Male

(c) format only 2003 The Dialog Corp. All rts. reserv. 06624810 90250373 PMID: 2187048 Gonadotrophin glycosylation and function. Wilson C A; Leigh A J; Chapman A J Department of Obstetrics and Gynaecology, St George's Hospital Medical School, London. Journal of endocrinology (ENGLAND) Apr 1990, 125 (1) p3-14, ISSN Journal Code: 0375363 Document type: Journal Article; Review, Review, Academic Languages: ENGLISH Main Citation Owner: NLM Record type: Completed INDEX MEDICUS Subfile: This review emphasizes the heterogeneous structure of the gonadotrophin hormones and the influence of different oligosaccharide structures on the bioactivity of these hormones. A summary has been made of the changes in biopotency of the gonadotrophins throughout the life-cycle of the human and in different endocrine states in the rat. In general it appears that the charge of the gonadotrophin conferred by the acid-radicals attached to the terminal groups on the oligosaccharide structures strongly influences biopotency. Basic structures have a greater potency in in-vitro assays, but a short half-life in the circulation, while acidic isoforms are less potent, but have a longer circulatory time and are thus more active in in-vivo estimations. More basic forms are secreted over the adult reproductive years compared with the prepubertal period and old age. The glycosyl structure of the carbohydrate groups also alters in different endocrine states and is probably also important for the bioactivity and potency of the hormone. **Gonadotrophin** -releasing hormone (GnRH) and gonadal steroids can influence the type of **isoform** synthesized and released, and therefore affect the function of **gonadotrophins**. GnRH enhances glycosylation, sulphation and biopotency. Oestradiol potentiates the glycosylation induced by GnRH and reduces sialylation , while testosterone increases sialylation . (122 Refs.) Tags: Animal; Female; Human; Male; Support, Non-U.S. Gov't Descriptors: Gonadotropins --physiology--PH; Adolescent; Glycosylation; Infant, Newborn; Middle Age; Oligosaccharides -- metabolism --ME; Pituitary Hormone-Releasing Hormones--physiology--PH; Rats No.: 0 Registry (Gonadotropins); 0 (Oligosaccharides); 0 (Pituitary Hormone-Releasing Hormones) Record Date Created: 19900618 Record Date Completed: 19900618 14/9/24 DIALOG(R) File 155: MEDLINE(R) (c) format only 2003 The Dialog Corp. All rts. reserv. 88283534 PMID: 2456202 Renotropic activity in ovine luteinizing hormone isoform (s). -Nomura K; Tsunasawa S; Ohmura K; Sakiyama F; Shizume K Department of Medicine, Tokyo Women's Medical College, Japan. Endocrinology (UNITED STATES) Aug 1988, 123 (2) p700-12, 0013-7227 Journal Code: 0375040 Document type: Journal Article Languages: ENGLISH Main Citation Owner: NLM Record type: Completed Subfile: AIM; INDEX MEDICUS

Renotropic activity was previously demonstrated in an ovine LH preparation. This preparation was further purified with a series of chromatographic steps, and the fractions were assayed for renotropic activity in vivo by their ability to stimulate [3H] thymidine incorporation into renal DNA of castrated hypophysectomized male rats. A purified preparation could be dissociated by acid treatment into two major constituent subunits, designated alpha and beta, each of which was composed of three microheterogeneous components (subunits alpha 1-3 and beta 1-3) by reverse phase HPLC. Peptide mapping, including amino acid analyses and partial sequencing of the purified peptides, showed that 1) subunits alpha

Differing responses of plasma bioactive and immunoreactive luteinizing hormone to follicle-stimulating hormone and antagonist and agonist treatments in gonadotropin-releasing hormone postmenopausal women.

Matikainen T; Ding Y Q; Vergara M; Huhtaniemi I; Couzinet B; Schaison G

Department of Physiology, University of Turku, Finland.

Journal of clinical endocrinology and metabolism (UNITED STATES) 1992, 75 (3) p820-5, ISSN 0021-972X Journal Code: 0375362

Document type: Journal Article

Languages: ENGLISH

Main Citation Owner: NLM Record type: Completed

Subfile: AIM; INDEX MEDICUS

Plasma bioactive (B) and immunoreactive (I) ${f FSH}$ and LH were measured every 10 min for 8 h in the same postmenopausal women in a three-phase study: 1) during normal pulsatile gonadotropin secretion (basal study; n = 8), 2) 8 h after a single injection of a GnRH antagonist (5 mg Nal-Glu, sc; n=5), and 3) 21 days after a GnRH agonist injection (D-Trp6, 3.75 mg depot preparation, im; n=7). I- FSH and I-LH were measured by antibody immunoradiometric assays. B- FSH and B-LH were monoclonal measured in selected samples with the immature rat granulosa cell and mouse interstitial cell assays, respectively. Significant pulsatility of B- and I- FSH and LH was demonstrated in the basal samples, but only the B/I ratio of LH was slightly elevated within the secretion peaks. After GnRH antagonist treatment, I- FSH decreased from a mean pretreatment level of 55.7 +/- 7.8 IU/L by 26% (P less than 0.001), and B- FSH from 313.8 +/- 61.9 IU/L by 44% (P less than 0.01). The B/I ratio decreased from 6.4 +/-1.7 to 4.5 +/- 1.0 (P less than 0.05). After agonist treatment, the I- and B- FSH levels decreased by 92% and 83% (P less than 0.0001), respectively, but the B/I ratio increased to 17.3 +/- 4.7 (P less than 0.05). The concentrations of I- and B-LH decreased by 75% and 80%, respectively (P less than 0.001), after antagonist treatment. After agonist treatment, I-LH decreased by 92%, and B-LH by 93% (P less than 0.0001). No changes in the B/I ratios of LH were found after either treatment. In conclusion, no changes were found in the quality of circulating LH during the treatments, whereas the antagonist treatment decreased and the agonist treatment increased the B/I ratio of FSH. These findings provide further evidence that the qualitative responses of FSH and LH to treatment with the same GnRH analog are different, and that the suppressive mechanisms of GnRH antagonist and agonist action on gonadotropin secretion are different.

Tags: Comparative Study; Female; Human; Support, Non-U.S. Gov't

Descriptors: Follicle Stimulating Hormone --blood--BL; *Gonadorelin --antagonists and inhibitors--AI; *LH--blood--BL; * Menopause; Adult; Biological Assay; Gonadorelin--physiology--PH; Immunoradiometric Assay; Middle Age; Osmolar Concentration

(Gonadorelin); 9002-67-9 (LH); 9002-68-0 CAS Registry No.: 33515-09-2 (Follicle Stimulating Hormone)

Record Date Created: 19921008

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03379462 81070089 PMID: 7440702 Difference in glycosylation between secreted and pituitary free alpha-subunit of the glycoprotein hormones. Kourides I A; Hoffman B J; Landon M B Journal of clinical endocrinology and metabolism (UNITED STATES) 1980, 51 (6) p1372-7, ISSN 0021-972X Journal Code: 0375362 Contract/Grant No.: AM-00679; AM; NIADDK; CA-08748; CA; NCI; CA-23185; CA Document type: Journal Article Languages: ENGLISH Main Citation Owner: NLM Record type: Completed Subfile: AIM; INDEX MEDICUS Tags: Comparative Study; Female; Human; Male; Support, U.S. Gov't, P.H.S. Descriptors: *Peptide Fragments--metabolism--ME; *Pituitary Gland --metabolism--ME; *Thyrotropin--metabolism--ME; Adult; Carcinoid Tumor --metabolism--ME; Chemistry; Galactose--metabolism--ME; Kidney Failure, Menopause ; Middle Age; Molecular Weight; Chronic--metabolism--ME;

Neoplasms -- metabolism -- ME; Sialic Acids -- metabolism -- ME; Thyrotropin--blood--BL CAS Registry No.: 0 (Peptide Fragments); 0 (Sialic Acids); 26566-61-0

(Galactose); 9002-71-5 (Thyrotropin) Record Date Created: 19810219

Record Date Completed: 19810219

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10701368 97050625 PMID: 8895353

In vivo bioactivities and clearance patterns of highly purified human luteinizing hormone isoforms .

Burgon P G; Stanton P G; Robertson D M

Prince Henry's Institute of Medical Research, Clayton, Victoria, Australia.

(Endocrinology-(UNITED STATES) Nov 1996, 137 (11) p4827-36, ISSN

0013-7227 Journal Code: 0375040 Document type: Journal Article

Languages: ENGLISH

Main Citation Owner: NLM Record type: Completed

Subfile: AIM; INDEX MEDICUS

Previous studies have shown that highly purified isoforms of human pituitary LH exhibited a 20-fold range of in vitro bioactivities. The aim of this study was to determine the corresponding plasma half-lives, metabolic clearance rates (MCR), and in vivo bioactivities of these human (h) LH isoforms . Cannulated adult male rats were administered hLH isoforms as a bolus i.v. injection. For the half-life studies, blood was then serially collected over a 6-h period, and serum was assayed for hLH using a specific immunofluorometric assay. All hLH (n = 19) isoforms exhibited biexponential disappearance profiles with an initial fast half-life (t 1/2) for component A of 12.8 + /- 3.7 min, followed by a slow component B with t 1/2 of 58.9 +/- 4.4 min. The prevalence of component B in relation to component A increased significantly (r = 0.81, P < 0.001)over a 3-fold range when correlated with the sialic acid content of the isoform . Similarly, the MCR showed a significant correlation (r = 0.77, P < 0.001) with sialic acid content. The basis for the two t 1/2 components was then investigated. In the first experiment, rat plasma containing primarily component B was collected 90 min after hLH isoform administration and injected into a second animal. Only component B was observed with no evidence of component A, which indicates that the two t 1/2 components are not the product of the redistribution of the hLH isoform between body compartments. In the second experiment, component B was found to be dependent on sialic acid content, as desialylated hLH showed a rapid disappearance (t 1/2 = 8.6 + 1/2 = 1.1) with the isoforms component B proportion decreasing to < 10% of that of the nondesialylated control. This data indicates that sialic acid protects component B from rapid clearance. In addition, the proportion of the two components is dependent on **sialic** acid content, suggesting that the molecular location sialic acid on the carbohydrate moieties of hLH has a critical role in the clearance process. To determine the in vivo bioactivity of the hLH isoforms , an acute in vivo bioassay was developed in male rats. The assay was based on the hLH dose-dependent increase in total testosterone release in the same rat model as used in the plasma disappearance studies. Using the second International Standard (IS) hLH (0.3 IU-2.6 IU/kg) as standard, a linear dose-response of 24-h integrated serum testosterone levels was observed, with an index of precision of 0.11. Using this in vivo assay, a 16-fold range in in vivo bioactivities (3,200 to 51,100 IU/mg) was observed for 14 hLH isoforms . These in vivo bioactivities correlated with acid content (r = 0.78, P < 0.001), MCR (r = 0.56, P < 0.05) and LH in vitro bioactivity (r = 0.75, P < 0.001) as determined using mouse Leydig cells in culture. Desialylation lead to over a 100-fold decrease in in vivo bioactivity of hLH. It is concluded that hLH isoforms are cleared in vivo by a two-component clearance mechanism, the proportion of which varies between **isoforms** and is dependent on **sialic** acid content of the . These findings suggest that the molecular location of sialic acid on the hLH isoform is critical in defining the plasma disappearance of component B, whereas the mechanism of elimination of component A may well involve the hepatic GalNAc-sulphate receptor. Using an in-vivo bioassay, the 16-fold difference in bioactivity between isoforms is attributed primarily to differences in their in vitro activity at the cellular level with a minor influence (< 2-fold) due to differences in in vivo clearance.

Tags: Animal; Female; Human; Male; Support, Non-U.S. Gov't

10828028 97179064 PMID: 9027351

Structural and functional characterisation of hFSH and hLH isoforms .

Stanton P G; Burgon P G; Hearn M T; Robertson D M

Prince Henry's Institute of Medical Research, Clayton, Victoria, Australia.

Molecular and cellular endocrinology (IRELAND) Dec 20 1996, 125 (1-2)

p133-41, ISSN 0303-7207 Journal Code: 7500844

Document type: Journal Article; Review; Review, Tutorial

Languages: ENGLISH

Main Citation Owner: NLM Record type: Completed Subfile: INDEX MEDICUS

Human follicle-stimulating hormone (hFSH) and luteinizing hormone (hLH) gonadotropins which are secreted as multiple forms by the pituitary. Evidence supporting the structural and functional heterogeneity of 15 purified hFSH isoforms and 20 purified hLH isoforms from pituitary extracts will be presented. Gonadotropin isoforms were purified by a combination of preparative isoelectric focusing and ion-exchange chromatography. The protein mass of each isoform was determined by amino acid analysis, which also correlated (data for hLH) (r = 0.999, P < 0.001, n = 15) with the UV area under the curve at 280 nm of the isoforms following gel=filtration HPLC. The alpha and beta subunits of FSH and LH were shown to be intact by SDS-PAGE under reducing condition, with no evidence of proteolytic nicking or presence of contaminating proteins. hFSH radioreceptor activity varied over a seven-fold range, and a positive correlation (r = 0.85, P < 0.001, n = 9) was observed between FSH receptor activity and the sialic acid (SA)_content (1.5=13.7 mol_SA/mol_hFSH) of the isoforms, as determined by an HPLC-based microfluorometric assay; FSH in' vitro activities varied over a similar range with a high correlation (r = 0.82, n = 15) with receptor activities, suggesting that the initial association of the hormone with the receptor is the key interaction with less differences attributed to subsequent effects in the signaling pathway. A similar result was seen with the hLH <code>isoforms</code> . To explore FSH/LH in vivo, the circulating half-life (LH/FSH) and the in vivo bioactivity (LH) using an acute in vivo assay was investigated. The clearance of hLH and hFSH showed a bi-exponential pattern for all **isoform** preparations with the proportion of the slower dissociating component (t 1/2 50-60 min) increasing three-fold with increasing sialic acid content of the isoform. The more rapidly cleared component (t 1/2 approx 10 min) is attributed to hepatically cleared **gonadotropin**, rather than **gonadotropin** equilibration between body compartments. The in vivo assay procedure for LH. was based on the 24 h integrated plasma testosterone levels in rats following administration of graded doses of hLH isoform or standard. A 16-fold range in vivo activities between LH isoforms (n = 14) was observed. A comparison between hLH in vitro and in vivo activities showed a good correlation (r = 0.75) with the slope of the regression line (1.39) not significantly different from unity. These results suggest that in this acute in vivo assay method, the differences in circulating half-lives between hLH isoforms although large is not a key factor in their in vivo activity. However, in chronic in vivo assay systems the differences in clearance rates between isoforms may be important in their subsequent biological response. It is concluded that structural heterogeneity of FSH and LH contributes to functional differences, with a key interaction occurring at the receptor level. The contribution of sialic acid to these activities was also investigated. (31 Refs.)

Tags: Animal; Human

Descriptors: Follicle Stimulating Hormone --chemistry--CH; * Follicle Stimulating Hormone --physiology--PH; * Luteinizing Hormone --chemistry--CH; * Luteinizing Hormone --physiology--PH; Follicle Stimulating Hormone --isolation and purification--IP; Follicle Stimulating Hormone --pharmacology--PD; Half-Life; Luteinizing Hormone --isolation and purification--IP; Luteinizing Hormone --pharmacology--PD; N-Acetylneuraminic Acid--analysis--AN; Structure-Activity Relationship

CAS Registry No.: 131-48-6 (N-Acetylneuraminic Acid); 9002-67-9 (Luteinizing Hormone); 9002-68-0 (Follicle Stimulating Hormone)

Record Date Created: 19970417

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